GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

Office: Tribune Building, New York.

Conducted by . . . . . Professor C. S. Sargent.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, APRIL 24, 1889.

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The Care of Small Tracts of Woodland.

We have many letters from owners of small tracts of woodland complaining that their trees are dying, that many of them blow down, and that their "woods are running out." The writers wish to know what is the matter, and what they can do to save their wood-lots. We note that most of these inquiries come from men who live in cities, or who have lived there, but who have places in the country which they desire to improve and enjoy, and some of them say that the more care and pains they bestow on their woodlands, the worse appears to be the condition of the trees. That comes pretty near telling the whole story; but let us look into the matter a little.

Nearly every farm of any considerable size should have a due proportion of woodland, a tract where forest conditions upon a small scale shall be permanently maintained. The importance of preserving and perpetuating their wood-lots is not, as yet, sufficiently appreciated or understood by the farmers and land-owners of this country. This is, in part, only a special instance or form of a feeling or mental condition which exists widely among our farmers—that is, a degree of discontent with farming as an occupation and investment, a feeling which leads multitudes of them to desire to escape from agriculture and "do something better." This has resulted from the habit of migration from the older portions of our country to the newer regions of the West, for the sake of richer and cheaper lands, and is reinforced by the restlessness and illusion which are elements of human nature. At present it imparts to nearly everything connected with the farming interest in America a quality of transitoriness and uncertainty, so far as particular persons and their possessions are concerned. A large proportion of our farmers are men who do not yet heartily accept farming as their occupation or business, and this uncertainty regarding the permanent ownership and occupancy of farm lands has a bearing upon many things connected with our national interests and civilization. We shall have occasion from time to time to discuss this element and its various effects; at present we merely recognize it as one of the causes of the prevailing low estimate of the value of farm wood-lots.

It is encouraging to see any signs of increasing attention to this kind of property, even if, as often happens, the new interest has an injurious or fatal effect. The intelligent observation and comparison of facts will lead to wiser methods of treatment.

The first thing a man from town usually does, when he comes into possession of a place in the country, is to clear out all the underbrush. He says he wishes to be able to see all over his wood-lot. Perhaps the ladies of his family desire to walk about in it, as in a kind of larger door-yard or lawn, and in order that movements and vision may be free all the bushes and small, "worthless" trees are removed. Let us attend to each point as we go along. If our friend wishes to walk in his woods, to enjoy their beauty, coolness and quiet, why does he not open winding paths through them, leading to the places of greatest interest? The first effect of removing the undergrowth, so as to permit an unhindered view of the whole tract of woodland from every part of it, is greatly to reduce its apparent extent, and as a consequence the sense and charm of possession—of ownership—is diminished in the same proportion.

Let us next note the fact that the removal of the undergrowth, and of all barriers to an unlimited view, destroys entirely the element of mystery, of surprise and expectancy, the quality which tempts and rewards the explorer, the impression and promise of something still before us and beyond what we can see, which may minister a fresh delight. When one can see all over a tract of woods at once, its beauty, its real attractiveness, has been eliminated—thrust beyond the threshold. It may still be a good place to look away from; as a mere point of view it may be worthy of resort or possession, if from it one can see distant-wooded hills, or long, upward-stretching mountain slopes with cloud-shadows drifting across them, or far-away gleams of the blue sea. But any beauty or charm which the place may have had in itself, or which might have been developed or created in it by judicious management, has been destroyed, and the woodland thus treated will not afterward have any spell or power to minister to the happiness or peace of any human being.

Why do the trees die, if they are not blown down? They usually and naturally die because of the increased desiccation of the ground about their roots, and the abrupt access of heat and light produced by the destruction of the undergrowth. The impoverishment of the soil also contributes to the death of the trees. The undergrowth, while it remained, acted as a mulch for all the trees, large and small. It detained the dead leaves until they decomposed where they had fallen. Where forest conditions are maintained the land grows richer perpetually. Now that the underbrush has been destroyed, the fallen leaves are blown away beyond the limits of the land which produced them, and are wasted wholly, or they feed and replenish the soil of another owner. In woods sustained by undergrowth this natural mulch retains the water supplied by rain, and the trees are fed throughout the summer. Now the water mostly runs off at once, and the effect of the heaviest rain lasts but a short time. When trees have nothing to drink they cannot eat, so they die.

To sum up, the natural conditions which have produced and maintained the trees in these pieces of forest or woodland have been interfered with and changed to such an extent that the trees inevitably perish. The passion for "improvement" often leads to draining the woodlands, thus hastening the catastrophe. In general, the best way to take care of small pieces of woodland is to let them mostly alone, keeping out all domestic animals, and taking needed precautions against fires. Open paths, of course, wherever they will enhance the interest of the woodlands and increase their charm for lovers of natural beauty. But in most of the settled regions of our country the woods will not bear any great increase of sunlight about the roots of the trees, or any considerable change in the natural conditions which produced the for-

est growth, and which have hitherto reproduced and maintained it. In such cases as we have considered the owner might almost as well have girdled his trees at once.

The first great improvement in rural cemeteries was made when the bounds between lots were abolished and the so-called "lawn-system" was adopted. In the earliest rural cemeteries, like Mt. Auburn, each owner of a lot was allowed to surround it with such a fence or hedge or stone curbing as suited his fancy. But the boundary-wall offered nearly as good an opportunity for the display of pretentiousness and individual bad taste as the mortuary monument itself, and cemeteries were converted into stone-yards, to which lavish horticultural expenditure gave no effect of rural restfulness or sanctity. The evil, like many others of the kind, cured itself in time; and now in all cemeteries where modern notions prevail no lot is sold without the special provision that the purchaser cannot in any way define its boundaries except by corner-stones sunk below the surface of the ground. The monument, however, remained, and as wealth increased, developed from year to year into a more hideous inappropriateness and vulgarity; and it became evident that without some active control in such matters on the part of the managers of cemeteries, they must fail in those very directions where, it was believed, American burial-grounds were better than those of any other country.

There is in Brookline, Massachusetts, a small rural cemetery belonging to the town, and governed by a Board of Trustees elected by the people. These Trustees, it appears, have taken the lead in instituting a much-needed reform by prescribing the manner in which monuments can be erected in this cemetery. They have had a number of different designs for simple gravestones made by a skillful architect, and if a person wishes to buy a lot he can do so only upon the condition that he will select one of these designs, or if none of them suit his taste, that he will submit some other to be approved by the Trustees.

The idea that underlies this system is the same which has done away with prominent bounds. It is the idea that no individual lot-owner has the right to do anything on his lot which will injure the aspect of the cemetery as a whole. The Brookline Trustees have further declared, on the same principle, that no monument or headstone of white marble shall in future be erected in the cemetery; they regulate for the general good, the selection, by lot-owners, of plants, baskets and other decorations; and discourage expensive architectural tombs. There is no extravagant horticultural establishment connected with the Brookline Cemetery; no beds of glaring flowers, no novel or misshapen trees, no attempts at display. It relies for its attractiveness upon natural woods carpeted with wild flowers, native shrubs and well-kept lawns bordered here and there by noble masses of natural rocks, after the striking feature of much New England scenery.

The idea of controlling the character of monuments in a cemetery is so novel, and indicates such a long step forward in the right direction, that we have obtained from the Board of Trustees the permission to reproduce, for the benefit of the public, and more especially for the benefit of the Trustees and managers of other cemeteries, the selection of their designs which appear upon later pages of this issue.

Hardy Deciduous Shrubs.

PERSONS who have not given direct attention to the matter rarely appreciate the richness and variety of the flora of our Atlantic States in trees and shrubs. One can hardly walk a mile over a road in any hilly section of these States where the waysides have been left with any liberty to clothe themselves with vegetation, without passing at least twenty species of trees and as many, perhaps, of shrubs. We have in mind a short water-course in northern New Jersey where a little brook, rising in apiece of springy upland, hurries down across three pasture-lots to unite with a larger stream in the meadows. At one point a rather steep bank rises from the brook to a height of thirty or forty feet, and along this bank for a dozen rods the trees and shrubs have been left to grow. Further down there is a little swamp, but elsewhere all is open grazing land, with single trees scattered sparsely over the fields and along the fences, or drooping over the brook. A visitor recently followed this little stream from its source to where it empties into the larger one, a distance of less than half a mile, and counted thirty species of trees. Here is the list: Tulip-tree, Basswood, Red Maple, Sugar Maple, Black Cherry, Wild Plum, Scarlet Thorn, Juneberry, Flowering Dogwood, White Ash, Black Ash, Sassafras, White Elm, Slippery Elm, Mulberry, Black Walnut, Butternut, Shagbark Hickory, Pignut Hickory, White Oak, Scarlet Oak, Black Oak, Pin Oak, Chestnut, Beech, Hop Hornbeam, Ironwood, Sweet Birch, Aspen, Smooth Alder and White Willow, the last a naturalized foreigner. As many kinds of shrubs and woody vines could, no doubt, be named, and perhaps a dozen other species of trees could be found within a radius of a mile, among them the White Pine, the Pitch Pine, the Hemlock Spruce and the Red Cedar.

This list is not quoted to prove the exceptional richness of this locality in species of deciduous trees and shrubs. There are places among the mountains of North Carolina, for example, where many more could be found. But the small number of coniferous trees, when compared with the others, is worth considering. Except in a few favored locations the ratio between the number of conifers and broad-leaved evergreens, on the one hand, and the number of deciduous trees and shrubs on the other, is very small throughout the central and northern Altantic States. This would seem to indicate that plantations should be largely composed of deciduous trees and shrubs. On our Pacific coast, conifers form a much larger proportion of the forest-growth, and in England, where the climatic conditions approach those of our Pacific states more nearly than they do those on this side of the continent, coniferous trees and broad-leaved evergreen shrubs are among the most conspicuous ornaments of the garden. It was natural that the earliest attempts at gardening in this country should have followed English models, and, as a matter of fact, many gardens in this country have fallen into premature decay because they were largely planted with conifers and evergreens, which have proved sickly and short-lived in our climate.

But because our hot summer suns and icy winters and long, dry autumns are unfavorable to this class of plants, there is compensation in the fact that these are just the conditions which enable deciduous shrubs to make a strong, healthy growth, to ripen their wood well, to bear flowers and fruit in abundance and to develop into a beauty which they can never attain under the soft, moist airs and equable temperature of western Europe. Not only are our native shrubs beautiful at all seasons, but there is hardly a day in the year when a garden composed of them exclusively would not wear some special attraction. Along the brook referred to at the beginning of this article, the bright fruit scarcely falls from the Black Alders before the Spicewood is in bloom. Flower follows flower all summer, and the wild Roses are still opening when the autumn colors begin to kindle in the foliage of the Sumachs. Even when the leaves are gone the Witch Hazel is covered with blossoms. If we add to such local groups the treasures of our colder northern woods and of the southern Alleghenies we can begin to understand how rich and varied a garden could be made from native shrubs alone. And, again, it cannot be too often repeated that for a combination of good qualities no small trees can be found in all the world to excel our Dogwoods, Viburnums, Thorns, Sumachs, Fringe-tree and several others. In foliage, flower and fruit; in form, habit and autumn color they make so effective an addition to the shrubs that we find no occasion to envy the gardens of England for their superiority in conifers.

But this is not all. Deciduous shrubs from other countries flourish here as well as our own. The trees of Europe, as a rule, do not thrive here, but the shrubs of Europe and those that have been produced in European gardens are readily established here, while those from eastern Asia and Japan can be found in every door-yard. Indeed, the Forsythias, the Spiræas, the Flowering Quinces, the Mock Orange, the Lilacs, the Snow-balls, the Tartarean Honeysuckles, the Weigelas, the Deutzias, the Rose of Sharon—the shrubs most commonly planted—are all of foreign origin, and among those recently introduced into cultivation are many quite as interesting as those of established reputation. Practically the number to choose from is almost limitless. In the Arnold Arboretum more than 1,200 species and varieties of shrubs are now growing, and further south a still larger collection could be gath-

ered. Most of them are easily raised. All they ask is ordinary kindness and they will increase in beauty every year. Best of all, they are adapted to small gardens, and small gardens in this country will always greatly outnumber the large ones. There is no village lot with a square rod of turf which cannot be beautified by a border of hardy shrubs, and there is a place for them, and a place of honor, too, in the most spacious and the most elaborate grounds. They are useful for massing and for single specimens, and the planter who knows how to handle them properly can find a place for them in comprehensive landscape effects as well as in the construction of cabinet pictures—in the middle distance as well as in the foreground of his compositions.

If there is to be anything distinctive in the gardens of eastern America, it will grow out of the freer use of deciduous shrubs, and in years to come those parks and gardens will be most interesting where these shrubs have been planted with the greatest intelligence and skill.

Tombstones for Rural Cemeteries.

MR. J. A. SCHWEINFURTH, a well-known architect of Boston, recently prepared twenty-five designs for simple cemetery monuments, and has kindly joined the Trustees of the Brookline Cemetery, at whose request the drawings were made, in consenting that a few of them should here be reproduced. It was difficult to choose eight as the most interesting, where all were very good; and those we give may be accepted not as better than the others, but simply as showing several different types which, with sundry others, were variously developed by the artist.

The first thing to be remarked in these stones is their simplicity; and it need hardly be explained that this is the most important quality they could possess. There may be many places where highly ornate sepulchral monuments are appropriate, but a rural cemetery is not one of them. But, on the other hand, simplicity should not mean crude ugliness, even in the smallest and most thoroughly rural burial-ground. Stones should be at once unobtrusive yet artistic, plain yet beautiful. Good taste should speak not only in the restricted use of ornament, but in its tasteful application and skillful designing. The artistic excellence of these eight designs will, we believe, be as readily appreciated as their lack of ostentation. In place of the bald shapes, clumsy profiles and mechanical inscriptions with which our simple tombstones in the past have made us familiar, here we have carefully studied proportions, graceful contours and the suggestion of a kind of lettering which, easily executed and easily read, has yet a certain decorative charm.

Perhaps the best of all the designs is No. IV. A flat slab, covering the place where the coffined form has been laid to rest, is undoubtedly the earliest form which the Christian monument assumed when it was placed in an open, grassy spot; and it seems the most natural and expressive form, explaining its purpose and marking the site it consecrates more exactly than an erect stone can do. Its inscription can be easily perused by those who stand beside the grave; and the fact that it is invisible at a distance may be counted a merit, as the last hint of ostentation is thus avoided. Countless memories come to mind of famous men whose tombs are marked by flat stones in those cemeteries of the Old World which most nearly approach in idea to ours; but we need only recall the fact that such a stone was thought sufficient to mark the grave of Albert Dürer in the suburban graveyard at Nuremburg. Those who seek it to-day where it lies embosomed in grass, and read its simple inscription, "*Emigravit*," receive an impression the appropriateness and adequacy of which must convince them that no more conspicuous memorial is needed even for the resting-place of a very noteworthy man. There is a Christian humility and dignity and a simple pathos in the aspect of a stone like Dürer's, or like the one here pictured, which is lost, perhaps, even in the most modest stone which stands erect. And from the point of view of the repose and sanctity of effect which a cemetery as a whole should have, flat stones are palpably preferable to all others.

No. VII. shows a modest type of headstone which is redeemed from poverty by its graceful proportioning and by the simple band of classic adornment which encircles the lettering. No. V. is another classic design which is given a less severe look by a nicely profiled base and cornice. No. VIII. is sturdier, again, in its proportions, and those who think classic ornamentation a little cold and inexpressive on a modern tombstone may be attracted by the Palm-branch which forms its decoration. Here a place for a possible second inscription is indicated on top of the stone, nor is there any reason why all its sides could not be used if the lettering were discreetly applied; and a single monument, bearing the names of several individuals, is often more desirable than many, being less obtrusive as well as much less costly. Too often we see a pretty lot, where a single attractive monument should have stood, encumbered with a row of stones which, if they are all alike, produce the unfortunate effect of things bought by the quantity or, if they are unlike, contrast unpleasantly with one another. No. I. shows another squarish stone, but with a canted space on the side for the inscription. In another design, not reproduced here, Mr. Schweinfurth varied this idea by making the stone still thicker and inclining both sides to give room for two inscriptions. No. VI. shows a stone which is extremely plain in outline but wins beauty from the decoration. It is intended, of course, for use upon a soldier's grave, and in the artist's series it was accompanied by a second, which was appropriate for a naval officer or sailor.

At the time of the Reformation, or more exactly, in Puritan days, the cross was so generally associated with the rites and usages of the Catholic Church that it was wholly banished from Protestant graveyards. No crosses can be found among the old tombstones of New England, and in Protestant Germany they are still rare. Modern American feeling, however, has again accepted them as the natural symbol of every Christian sect, and the form constantly occurs in all our cemeteries. We are unable to give our readers a strictly simple cross-form from Mr. Schweinfurth's hand; but something better, we think, is offered in the picture No. III. This is one of the very earliest of Christian gravestone-forms reduced to its simplest elements. It shows that combination of the cross and the circle—the emblem of Christ and the emblem of eternity—which more constantly appears than any other design in the oldest sepulchral monuments of the northern nations of Europe. In many parts of the British Isles gravestones may still be seen—not, of course, in their original positions, but preserved in church or cloister, or in some antiquarian collection like the rich and interesting one in the library of Durham cathedral—which antedate not only the Norman, but the English conquest. They have come down to us from that early British Church which flourished when the Romans bore sway in the land, which was wiped out of England proper by the deluge of Anglo-Saxon heathens, but lived on in Ireland, thence extended its influence to Scotland, and from Scotland came back into the north of England again when the missionaries of Rome were converting the more southerly districts. And on almost all these monuments—separated from one another, perhaps, by several centuries of time, but akin in that artistic character which is popularly called "Celtic"—the cross within the circle appears. Sometimes it forms the body of the stone, as in our picture, although seldom so simply treated as here. Sometimes it is carved in relief, sometimes incised; but in one shape or another it is the prevailing motive. Surely, therefore, there can be no motive which is more appropriate for the use of modern Christians descended, as a rule, from the inhabitants of the British Islands. None could have greater historical sanctity, none could be more expressive in its meaning, and none could be more attractive to the eye. It was, indeed, because of its many claims to attention that two designs were selected for reproduction in which this symbol appears. In No. III. it forms the monument; in No. II. it is carried upon a plainly outlined headstone, and interwoven with those ribbon-like lines which were the great and inevitable feature in all kinds of "Celtic" ornamentation. This stone might almost be accepted as a genuine relic of the early British Church, and seeing that it is wholly unaffected, appropriate and modern-looking, the fact will undoubtedly recommend it to those who care for artistic, historical, or ecclesiological suggestiveness.

There is another merit, we may add, in designs as simple as these besides the great merit of appropriateness to their place. They are not difficult to execute; they can be well formed and carved by any intelligent stone-mason, while an elaborate design with very varied profiles and intricate carvings needs a skillful sculptor for its right execution. Even where money is not grudged is is usually difficult to find such a sculptor just when and where he is needed for such a purpose. The original designs which Mr. Schweinfurth prepared were drawn on a larger scale than our reproductions, and were accompanied by sections from which any careful mechanic could work with success.

Of course the good that may spring from the publication of this little series need not be confined to actual imitation of the designs portrayed. Each of them suggests much more than it reveals; each of them may become the text for a large number of variations. Only, it should be borne in mind that to

vary such designs and secure a corresponding degree of excellence is not a task which the client should assume himself or should confide to the average stone-cutter. They are excellent and attractive not because they are simple, but because their simplicity is artistic; and it is artistic because an artist was employed to make them. Yet this fact need not deter any individual or association, however modest the sum of money at command, from attempting to secure their like. The task is one for an artist, but for an artist it is not a very difficult task. There are many young architects in America who could design good gravestones now that Mr. Schweinfurth has pointed out the direction which their efforts should take; and their fees would doubtless not be large for a single stone, or even for a number sufficient to serve as a sample stock, so to say, for the trustees of a rural burial-ground. An architect, be it remembered, and not a sculptor, is the proper person. Quite apart from the fact that well-trained architects are more frequently found in this country than well-trained sculptors, it may be explained that a sculptor's training does not prepare him to deal with formally-shaped blocks of stone, much less with ornamentation of an architectural character, such as incised bands of decoration, and especially profiled bases and cornices. The better sculptor he is, the more certain he will be to recognize this truth. Indeed the best sculptors make no secret of the fact that whenever an architectural element, no matter how small and simple, occurs in their work, they call upon an architect for assistance.

If Mr. Schweinfurth's designs excite the interest they should, if they stir up those who purchase monuments to demand something better than the stone-cutter's clumsy and mechanical wares, and inspire his professional brethren with a wish to show what they can do in the same direction, the public will owe a great debt to him as well as to the Brookline Trustees who employed him. We believe that only in very exceptional, isolated instances has an artist hitherto been called upon to design a simple headstone for a grave; and we are certain that no series of such memorials, designed by an artist, has hitherto been published.

New or Little Known Plants.

New Japanese Chrysanthemum, Wm. H. Lincoln.

IN this new Chrysanthemum, another of the interesting Mrs. Alpheus Hardy collection, we have a combination of qualities seldom displayed in one variety. The habit is strong and bushy, the foliage fine; the flowers are of enormous size, and of a desirable rich yellow color, similar in shade to those of the variety Jardin des Plantes; they are supported by unusually stout stems, which always hold them in an upright position. The petals are long, tubular for about half their length, the outer portion nearly flat, with slightly incurved tips.

The illustration shows a flower considerably less than natural size. *A. H. F.*

Foreign Correspondence.

London Letter.

BITING north-east winds, with sharp frosts now and again in the early morning, are causing fruit-growers a little anxiety, but the sunshine is calling forth flowers in all sorts of nooks and corners, and the Daffodils are almost in their full glory. Amongst a host of varieties, big and little, distinct and not distinct, there are several which are delightfully good. Among these are *N. cyclamineus*, one of the Calathinus group, whose history appears to be almost as romantic as that of the Shortia, *N. minimus*, a pretty little flower, and *N. Santa Maria*, one of Mr. Barr's discoveries, and the darkest yellow I have yet seen. The flowers of the latter are very large, and not unlike the Major variety of Pseudo-Narcissus. Erythroniums of various sorts, chiefly of *E. dens-canis*, although your *E. grandiflorum* is also well represented, are beautiful both in leaf and flower. *Primula denticulata*, *Chionodoxa Sardensis* and *C. Luciliæ*, the two last being sheets of the brightest blue, and the old *Scilla Sibirica* are almost, if not quite, as pretty. These three plants are largely used at Kew for outdoor effect in early spring, the Scilla greeting one in beds and in the grass in all parts of the garden. *Anemone blanda* is still beautiful with flowers; as also are the Hepaticas. Primulas of many kinds are in bloom, most of them in pots in a frame or cold green-house.

Daphne mezereum is now at its best, several large beds of it at Kew being just now a great attraction. Planted in a peaty soil in a moist, somewhat shaded, position, this Daphne becomes a large shrub, and flowers most profusely. *Prunus divaricata* is in full bloom, a large, spreading tree of it being a prominent feature on one of the lawns.

Drosera cestiflora is at last flowering at Kew, and bears out all that has been said and written in its praise as a beautiful flowering plant. The stem is erect, five inches high, with linear leaves two inches long and covered with reddish, glandular hairs. The flower is terminal, saucer-shaped, two inches across, and colored a brilliant poppy-scarlet. *Godwinia gigantea*, enormous-flowered, tuberous-rooted Aroid, is also in flower at Kew. The spathe is boat-shaped, two feet long, very stout, and colored deep vinous purple. The plant is a native of Nicaragua.

The Hyacinth, its history and cultivation, was the subject of three papers read before the last meeting of the Horticultural Society, two of the papers being by well-known Dutch growers of these plants, the third by Mr. Douglas, a noted grower and exhibitor of Hyacinths in England. Amongst much that was of interest, nothing particularly new was started, except a fresh theory as to the origin of the garden Hyacinth, and the suggestion that there does not appear to be any good reason why the Dutch should hold a monopoly of the Hyacinth trade. At Kew some experiments in Hyacinth cultivation have been and are still being made, and as far as they have gone they show unmistakably that these plants, like the Tulip, Crocus and Daffodil, may be grown year after year with as good results in some cases as anything from Holland. Miller preached this practice a hundred and fifty years ago, and it is true several attempts have been made since then by English horticulturists to wrest at least a portion of the Hyacinth trade from the Dutch, but they failed because of the prejudice in favor of the Holland bulbs. The natural conditions which in Holland are said to be exceptionally favorable to the Hyacinth and other bulbs are not really so. I mean, that so far as the real wants of the bulbs are concerned the conditions are just as favorable in many parts of England, and probably in America also. It is simply a question of labor and prestige. There are some even now who recommend Dutch Narcissi before English grown, in spite of the superiority of the latter, as has been shown again and again. We know that tulips can be grown at least as well here as in Holland. But the Hyacinth has yet to be grown here. There is something peculiar about the life-history of the latter which I do not yet understand. As a rule, after the bulbs have been once flowered in England they are considered of no further value. Mr. Douglas, in his paper, recommended distributing them among the poor. Is there any reason why the garden Hyacinths should not grow on and improve from year to year, as, for instance, Lilies, Narcissi, and many other similar plants do? At Kew we find that the bulbs of many of the sorts after flowering develop two to four crowns, so that there are several spikes, smaller ones, naturally, the year following. In such cases it is likely that the crowns should be pulled apart and grown on as if they were young bulbs. All the garden Hyacinths have sprung from *Hyacinthus orientalis*, a comparatively poor plant, not much, if at all, better than our wood Hyacinth, and, like it, blue-flowered. It is remarkable that, although the first record of the cultivation of the Hyacinth was about the year 1585, there was a white variety in 1602, all colors in 1614, and in 1657 double-flowered forms were known. In 1725 no less than 2,000 named varieties were in cultivation. There appears to have been a Hyacinth, as well as a Tulip mania, such sums as £133 8*s* 6*d* having been given for one large and eight small bulbs of a double, blue variety. Nowadays a shilling is a good price to pay for a good Hyacinth.

In Holland the Hyacinths are grown in fields, which are well-manured with cow-dung, cropped once with potatoes, and then the bulbs are planted in September. As soon as the flowers expand the spikes are cut off, and in June the bulbs are lifted, dried and stored till the following September. This is done annually till the bulb is large enough for the market. They are propagated from bulbils produced at the base of old bulbs, which have been cut several times across the bottom or the base scooped out. It takes from four to six years to grow a full-sized bulb from one of these bulbils, and about eight years from seeds. The latter, however, are never employed except by breeders. I wonder what the Dutch growers do with the matured bulbs which remain on their hands unsold? This year Hyacinths have been below the average, owing, no doubt, to the absence of sunlight and warmth during the early part of last summer. Those who have a quantity of bulbs on hand after they have flowered in pots should plant them on lawns or grassy banks in a sunny position. They will take care of themselves and make a beautiful display in spring. There is a bank of them in the wild garden at Kew, and they are, at least, as great an attraction as the thousands of Daffodils and

carpets of Crocuses, which are also a feature of this wild garden.

The following plants were amongst those exhibited at the "Hyacinth Conference" and were noteworthy: *Cyrtopodium Saintlegerianum*, a magnificent Orchid with a spike a yard high, freely branched and bearing over a hundred flowers, which were yellow, thickly barred and blotched with chestnut-red, prettily undulated, and formed so as to resemble butterflies. The large bracts at the base of the branches were as brightly colored as the flowers. It is probably only a variety of *C. punctatum*, an old garden Orchid, though rarely flowered. *C. cardioclæna*, a yellow-flowered species was also shown. It is very similar to *C. Andersoni*, differing chiefly in the form of the crest on the labellum. A magnificent spike of *Odontoglossum crispum* var. *Stevensii*, with flowers four and a half inches across, of perfect form and heavily marked with large chestnut blotches, was shown by Baron Schroeder. *Oncidium superbiens* and *O. macranthum* were shown in first-class condition. These two are among the very choicest of Oncidiums, indeed, one might say of all Orchids. The last named had a spike eight feet long, and the flowers were each three and a half inches across, with dusky yellow sepals, bright yellow petals, a curiously formed fleshy-purplish lip, bearing a prominent white crest. *Dendrobium melanodiscus*, a hybrid from *D. Ainsworthii* and *D. Findlayanum*, was shown by Sir Trevor Lawrence. He also sent a plant of *Odontoglossum Ruckeri-anum*, a very pretty species, or probably a natural hybrid between *O. cirrhosum* and *O. crispum*. *Spathoglottis Kimballiana* (*S. aurea*), a grand Orchid, which a friend well described as a "big, yellow-flowered Phalœnopsis." *Dendrobium micans*, said to be a hybrid between *D. Wardianum* and *D. lituiflorum*, but not perceptibly different from some forms of the last-named species, was sent by Messrs. Veitch and obtained a first-class certificate. The same firm sent beautiful little examples of *Boronia heterophylla*, and some new Hippeastrums. A Clivia named John Laing was exhibited by the nurseryman whose name it bears, and was generally admitted to be the largest-flowered and deepest-colored of any yet seen.

April 5th. *W. Watson.*

Fig. 104.—New Japanese Chrysanthemum, Wm. H. Lincoln.—See page 196.

Cultural Department.

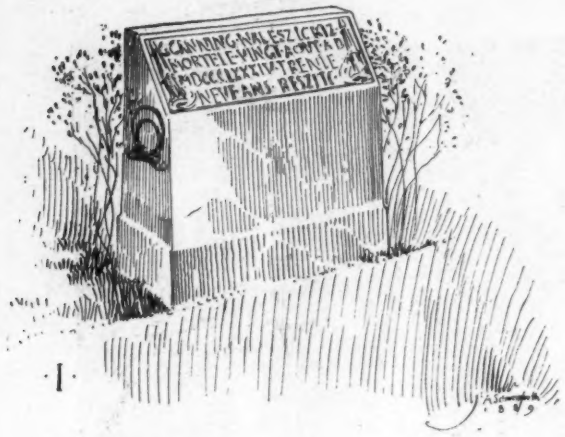
Evaporated Sulphur in the Green-House.

THE value of this remedy against many parasitic fungous growths and minute insects which infest plants grown under glass has long been recognized, but the results of some experiments made by Professor S. T. Maynard are so interesting they are worth the attention of everyone who grows plants under glass. The report was made in a bulletin of the experiment station connected with the Massachusetts Agricultural College.

This remedy consists in keeping a kettle or basin of sul-

SELECTIONS FROM TWENTY-FIVE DESIGNS MADE FOR THE TRUSTEES OF WALNUT HILLS CEMETERY.

J. A. SCHWEINFURTH ARCH^T BOSTON.



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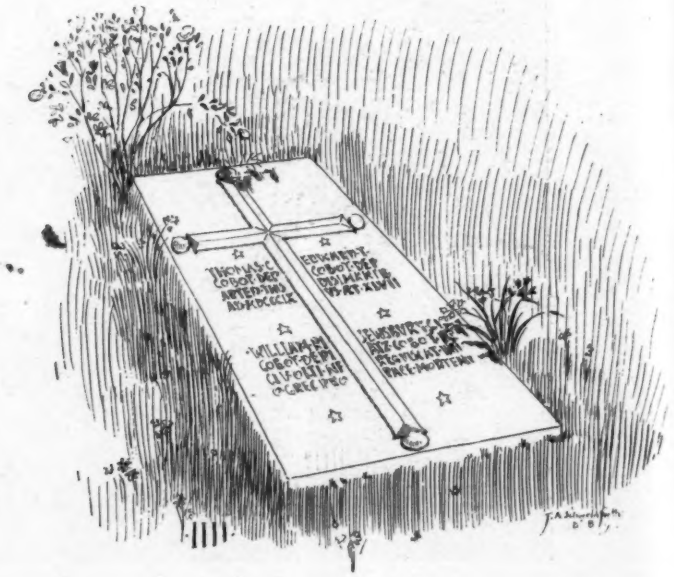

IIII

phur (brimstone) heated to nearly the boiling point, in the room for three or four hours, twice or three times a week. The apparatus used at Amherst was a Florence or Monarch hand-stove with the sulphur in a thin iron kettle. Enough sulphur must be evaporated to fill the room with the vapor, so that it will be visible and give something of the odor of sulphur.

Rose mildew (*Erysiphe pannosa*) is a very common difficulty in green-houses not properly constructed. It may be brought on by the exposure of plants while growing rapidly to draught of cold air, by high temperature night and day, by watering and syringing late in the day, by lack of plant-food, bad drainage, extreme dryness, or anything, in short, that may weaken the plant. This mildew was abundant, but after the use of the sulphur it quickly disappeared totally. The remedy had the same effect on the Rose-leaf blight, *Actinomena rosea*.

The greatest obstacle to the growth of good Lettuce under glass is perhaps the Lettuce mildew (*Peronospora gangliformis*). A fair trial of evaporated sulphur led to the conclusion that it will prevent the development of the mildew, but when the fungus is once established it will not destroy it. Before trying remedies Professor Maynard suggests, as preventive measures, that Lettuce under glass be grown at low temperature, ranging from 35° to 40° at night to 50° to 70° during the day; that an abundance of plant-food be supplied at all times; that soluble nitrates are valuable in quickly developing a resistent vigor of leaf; that an abundance of water must be

used, but the drainage should be good and the watering done in the morning and on bright days only; that sudden extreme changes of temperature must be avoided.

The reasons for these precautions are that in order to have perfect assimilation and growth in plants under glass, that temperature must be provided under which they grow most vigorously out-of-doors. In the garden we find the night temperature averaging from fifteen to twenty-five degrees lower than that of the day. In the summer when the temperature is high and ranges about the same, night and day, mildew, blight, rust, smuts and all manner of parasitic plants grow rapidly. Now, if in our green-houses we ventilate during the day-time, and at night start up the fires so that the temperature is as high at night as during the day, we have just the conditions under which mildews develop outside, and if a record of the temperature were kept in those houses most afflicted with mildew this condition of things would, no doubt, be found.

As with the Rose mildew, a sudden chill, when the Lettuce plants are growing rapidly, will check their growth and so weaken them that the cells develop food in the proper condition for the rapid growth of such parasitic plants. That a plant in a vigorous, healthy condition will resist the attack of the mildew longer than a sickly one is shown by the fact that the weakest plants are always first injured by it. It is to guard against such weakness that all the elements of plant-food must be supplied in abundance, and especially in a quickly

soluble form. In an experiment made with Sulphate of Potash, Muriate of Potash, Nitrate of Soda, Nitrate of Potash, Sulphate of Ammonia, Bone-black, Dried Blood and seven other mixed fertilizers, it was found that the Nitrates of Soda and Potash, applied to a soil liberally supplied with stable manure, produced a vigor of leaf that was much less injured than where the other elements were used.

The reason for watering in the morning is that the Lettuce mildew, like most plants of its kind, can only grow under conditions of a close, moist atmosphere and a high temperature, and if the watering is done in the morning, and especially on sunny days, the moisture gets dried from the leaves before night, and the mildew is less liable to grow.

In using evaporated sulphur it should always be borne in mind that burning sulphur is quickly destructive to all plant growth, and every precaution should be taken that it is not heated so hot as to take fire, or that the kettle does not get upset. The lamp or stove should have a broad base or the kettle be placed on a tripod with feet well spread. It should be placed under the bench where it can be readily seen, but where the clothes of a person passing by may not catch upon it and upset it.

The vapor of sulphur also proved effective in cases of Grape mildew and the leaf blight of Chrysanthemums. It routed, too, the red spider, one of the worst pests of the green-house.

Cattleya Lawrenceana.

SIR RICHARD SCHOMBURGK, while exploring British Guiana during the years 1840–1844, was the first to discover this handsome Cattleya, which he mistook for *C. Mossiæ*—a species which has only been found in Venezuela. For many years collectors of various firms undertook perilous journeys in search of this Cattleya, but all their efforts were unsuccessful until as recently as 1884, when it was rediscovered in the Roraima region of British Guiana, growing along the banks of the Kookenaam River among rocks and on the trunks of trees. Although the introduction to cultivation of this species is comparatively recent, it has nevertheless become already one of the greatest favorites with amateurs and horticulturists, who value it on account of the great beauty, richness and distinctness of its flowers. The spikes have generally from three to five flowers, and sometimes more, each about six inches across, with oblong sepals, and elliptic, wavy petals, varying in color from pale rose, to deep rosy-purple, the tips of the petals being usually darker. The funnel-shaped lip is usually of a very rich crimson-purple, the intensity of which renders it conspicuous at a great distance; the throat is creamy-white, lined with rose. The flowering season begins in April, just when *Cattleya Trianæ* and its innumerable forms are finishing, and lasts until *C. Mossiæ* and *C. Mendelii* begin to bloom.

Growing as it does among rocks and trees in its native home, this species may be grown with equal advantage either in pots or baskets, as the cultivator thinks suitable, and placed in the usual compost of good, fibrous peat, with a layer of clean crocks underneath. It thrives best in a warm corner of the Cattleya house, where the pots or baskets, as the case may be, should be suspended from the roof in a position to allow as much sunlight as possible. During the growing season, that is, early in the year, plenty of water should be given, and only on certain occasions, when the rays of the sun may be considered exceptionally powerful, should any shading be given. During hot days air may also be freely given; but the instinct of the cultivator must guide him in all these things. When the flowering season is over, water should only be given sparingly, in fact, only just enough to enable the plants to retain their plumpness. Shifting the plants at this time into a slightly cooler house would be beneficial, so as to ripen the growths, and encourage them to flower freely when the season for doing so comes round again.

St. Albans, England. *John Weathers.*

Roses for Out-door Planting.

IN making preparation for planting or re-planting out-door Rose-beds, deep cultivation, good drainage and the liberal application of manure well worked into the soil are essential. Well-rotted stable manure is usually found the most satisfactory fertilizer. In the planting of permanent beds of hardy Roses it is generally found that plants on their own roots are better than grafted ones, from the fact that the latter are more likely to be winter-killed, unless they are grafted very low down on the stock, so that the point of union may be entirely covered with earth in planting out. If this is done the plant will frequently send out roots from the base of the graft, and thus become more or less independent of the stock. If the plants have been grown in a warm house they should be gradually hardened off for the change. When the plants are dormant, having been grown in a cold frame or some similar structure, or merely heeled-in for the winter, it is well to plant them out as early as possible, as plants in this condition require a little more time to become established than young plants in active growth.

To those who have not yet decided what varieties to plant, the following brief list of well-tested Roses is added. Among hybrid perpetuals are:

ALFRED COLOMB.—A bright crimson descendant of General Jacqueminot; very fragrant and most desirable in every way.

ANNA DE DIESBACH.—Yielding large flowers of a pleasing shade of carmine.

EUGENIE VERDIER.—Silvery-pink in color, large and of beautiful form. An improvement on Victor Verdier.

FISHER HOLMES.—Deep crimson, and of good form. Considered by many growers an improvement on General Jacqueminot.

GENERAL JACQUEMINOT.—Too well-known to need description, and still growing in popularity.

JOHN HOPPER.—A free grower and profuse bearer of bright, rose-colored flowers.

MARIE BAUMANN.—Carmine-crimson, a lovely shade of color, and also of fine form. Very fragrant, and altogether a charming Rose.

Among Tea Roses, Bon Silene, Souvenir d'un Ami and Marie Van Houtte are about the most satisfactory for out-door culture.

The best known Bengal variety, Souvenir de la Malmaison, though old, still retains a place in the front rank of popular sorts.

In the foregoing list, pure white varieties have been omitted, and this deficiency may be met by the addition of Madame Plantier (Hybrid China), for early flowering, and the Hybrid Noisette, Coquette des Blanches, for later blooms, the latter being a very useful variety for summer flowers.

A few Polyantha Roses will also prove a pleasing feature among out-door Roses, with their abundant miniature blossoms.

MIGNONETTE, with flowers of a delicate, light rose color, and Paquerette, pure white, are two of the best of this section. If a representative of the Hybrid Teas is desired, La France is decidedly the most satisfactory, but like most of its class, and also the pure Teas, it needs some protection in severe winters, at least if planted in an exposed position.

Holmesburg, Pa. *W. H. Taplin.*

Tulipa Turkestanica.—This is perhaps the earliest-flowering species of this numerous family, coming in with the earliest of spring-flowering bulbs. *T. Turkestanica* has pretty, yellow flowers, which are produced as many as six on a stem. Our plants have been grown in the open ground for several years without any protection whatever, and flower annually. This plant, as the specific name implies, is a native of Turkestan. We are indebted to Dr. Regel, of St. Petersburg, for this and many other interesting plants.

Puschkinia scilloides, or Striped Squill, is a remarkably pretty little plant from Asia Minor, much resembling a Scilla in size and habit. The flowers are white, and are produced in dense racemes, each of the divisions of the perianth being prettily striped on both sides, with blue down the centre. When planted with *Scilla Sibirica*, *P. scilloides* has a charming effect.

Chionodoxa Luciliæ has been sufficiently catalogued to need no description, but too much cannot be said in its praise as a hardy spring-flowering bulb. We find the bulbs do not deteriorate, but come stronger year after year, and no matter what may happen the plant, even to being plowed under, the pretty, starry flowers are sure to appear at their appointed season. All the above thrive best in a sandy soil, where there is no fear of too much moisture during their resting season, and the best results are obtained when the bulbs are lifted every second or third year and re-planted, adding some well-decayed manure to the soil before doing so.

Anemone Pennsylvanica.—For naturalizing in semi-wild places there is no Anemone so suitable as this fine, native species, not excepting the cosmopolitan *A. nemorosa*. We remember to have seen *A. Pennsylvanica* holding its own among tall grass in an open, dry spot by the road-side. The flowers are of the purest white, rivalling the Japan Anemone in size and purity. Owing to the rapidity with which this plant spreads it is not to be recommended for the flower-border proper, but should be planted where it may have plenty of

room to occupy, as single plants the second year after planting will have taken possession of a square yard of ground, giving in return an abundance of bloom in June and July.

Passaic, N. J. *E. O. Orpet.*

Spring-Flowering Irises.—I am pleased to observe from a note in your paper that *Iris reticulata* is now also appreciated in America. I beg to state that the typical plant will soon be eclipsed by improved varieties having all parts of the flowers much larger. The color, too, begins to become more varied in seedlings, and very soon we shall have this plant in all shades, from blue and blackish-red to white. I was successful last year in producing a splendid novelty in the shape of the closely allied *I. Bakeriana;* this has standards and claws of sky-blue; falls, white, spotted with violet and the lamina of a blue-black color. This makes altogether a lovely combination, quite as hardy and early as *I. reticulata*, and also fragrant. *Iris Rosenbachiana* in its striking coloration looks rather Orchid-like, and ranks among the earliest and most valuable spring flowers. It has a white ground, with shades and blotches of purple-red and slaty-blue. The flowers are rather large, and deliciously sweet-scented. It is a native of central Asia. *Max Leichtlin.*

Baden-Baden.

About Peas.—There is no necessity for planting dwarf Peas now in a home-garden where neatness should prevail, and it is impossible to secure neatness where Pea-vines tumble about as they will. Even when such Peas are planted they should have some support, especially since galvanized wire-netting of any width can be had at three-quarters of a cent for a square foot. A trellis of netted wire is almost invisible when bare, and entirely so when covered with vines, and it is as good for Sweet Peas to flower upon as it is to support ordinary garden Peas. With this cheap trellis, which can be rolled up and kept for years in good condition the question of the height to which a Pea-vine grows assumes less importance, and since unsightly brush can be dispensed with it adds much to the neatness of a garden.

It is too late now for the very earliest planting of Peas, except in the most northern portions of the country. This should be made just as soon as the ground is in working condition. The early market Pea, sold under a different name by every dealer, should never be planted in the home-garden. What the market-gardener wants is a Pea which is early and matures its crop all at once, so that he can clear away the ground and prepare for a succession. For the home-table an early Pea is wanted, and one that will continue to supply the table for some time. Fine flavor, too, is essential, and productiveness of less importance. Of late years wrinkled varieties of the richest quality have been produced, which are scarcely behind the hardy little Daniel O'Rourke in earliness. All things considered, Alpha is as good as any for first crop. Then it is well for a second planting to put in four varieties on the same day—Alpha, Premium Gem, McLean's Advancer or Stratagem and Champion of England. These will be fit for use one after the other, and keep up a succession for three or four weeks. A second and third planting of Champions, at intervals of ten days, will furnish the table with green Peas until their flavor begins to decline in the hot, dry weather.

A late crop of Peas can be had about the time of early frost by sowing Premium Gems in early September. It is always best to sow these late Peas in deep furrows, cover them lightly, and gradually draw the earth to them as they grow. If the weather is favorable a fair crop may be had, but mildew is an enemy to autumn Peas, which it is difficult to prevent entirely.

Crozet, Va. *W. F. Massey.*

Principles of Physiological Botany, as Applied to Horticulture and Forestry.

XVII.—The Fruit and Seed.

THE ovary of the flower contains the ovules, and when ripened the whole becomes the fruit, enclosing the seeds. For instance, the ripening pea-pod consists of a parchment-like ovary filled with maturing ovules. Each pea-pod remains distinct from all others, and is free from union with any other parts. Many ovaries, on the other hand, are composed of what we may regard as two or more fruit-leaves united. Again, many ovaries during their formation and ripening become conjoined to some neighboring parts which undergo processes of change simultaneously with them. The ovary of the apple and pear is compound, and, furthermore, comprises certain parts of the flower-stalk (or receptacle) and the outer row of modified leaves of the flower, all of which form at maturity the fruit as we know it. But, strictly speaking, only the apple-core is the fruit, in the sense of its being the ripened ovary with its ripe seeds. The instances of the combinations of neighboring parts with the ovary are innumerable, and the modifications are extremely diversified. In the ripening of the fruit changes take place in the whole structure and texture; in fact, we may range from the most juicy pulp to the most flinty stone.

In these changes during ripening there is a remarkable accumulation of food materials such as starch, sugar, oil and the like in the fruit and seed, and between the two parts there exists an interesting compensatory relation. Thus, in the peach, the greatest accumulation of food is found in the pulp surrounding the peach-stone, while in its nearest of kin, the almond, the food is collected in largest amount in the seed itself. The two well-known allied fruits of the Tropics, the Cocoanut and the Date, furnish another case of the same sort.

The treasuring up of food in the fruit and seed is accompanied by more or less oxidation. This is to be expected, for we have here a case of rapid growth, and as we have seen, oxidation is one of the principal phenomena of growth in general. Now the rate at which the process of growth proceeds in the fruit and seed is measurably under our control. If we detach a fruit from the parent plant when yet unripe, and keep it under conditions where it can obtain a moderate amount of oxygen sufficient for its needs, it will continue to ripen. There is one well-known condition necessary to this continuance of the process—the surroundings must reach a certain temperature. If there is not sufficient warmth, the process is arrested, and the fruit can be kept for a long time without marked change. This is the principle on which the cold-storage warehouses are now conducted with success. Another important advantage is gained by keeping the fruits in a cold place—they are far less liable to be attacked by the organisms which cause decay.

The seed contains a ready-formed plant in miniature, with an adequate supply of food for its earliest period of germination. The parts of this miniature plant are: (1) Root, foreshadowed by the cone at the extremity of the stem. (2) The stemlet. (3) Seed-leaves. (4) First bud. During the process of germination, to be described in the next paper of this series, these parts increase in size at the expense of the food stored within the seed, the supply being sufficient to help the plantlet through its early days until its expanding green leaves have the opportunity of manufacturing food out of the inorganic materials taken from the air and the soil. The food is generally an admixture of oils with other matters, but there are a good many seeds in which the amount of starch far exceeds the amount of oil. If the food is plainly distinct from the germ it is known as the albumen; if the whole store of food is in the embryo itself, the seed is said to be ex-albuminous.

Perhaps the most comprehensive view of the food in a seed, can, for our purpose, be gained by a brief examination of that which is treasured in a grain of wheat. (1) The presence of mineral matters in the seed is shown by the ash left after combustion in the open air; this ash consists essentially of the inorganic constituents shown in a former paper to be absolutely necessary to the healthy growth of the plant. (2) Starch, sugar and oil in the seed are easily demonstrable by simple processes of separation. (3) Nitrogenous substances, forming the viscid mass left when moistened flour is washed with water. These latter matters are complex, but, as we have seen before, they may be roughly classified together as the substances which are akin to the flesh of animals, namely, the albuminoids of various kinds. Part of the latter represents, of course, the very flesh of the plantlet itself, to wit: the protoplasm of living matter in which its activities are manifested.

The length of time which can elapse before a seed loses its vitality is very different for different plants. The periods have been determined with great accuracy by Vilmorin for a good many of our cultivated plants, especially those of our vegetables, a few of which data, including also weights and numbers are given in the table below. It must be understood that these figures represent only the average of merchantable seeds.

Name of Plant.	Weight, in grammes, of one Litre	Number of seeds in one gramme.	Duration of germinative power.	
			Average.	Extreme.
Beet, ...	250	50	6 years.	10 years.
Carrot, ...	240	700	4 to 5 "	10 "
Celery, ...	480	2,500	8 "	10 "
Cucumber, . . .	500	35	10 "	10 "
Beans, ...	625 to 850	75 to 800	3 "	8 "
Maize (Sugar-corn)	640	4 or 5	2 "	4 "
Peas, ...	700 to 800	2 to 5	3 "	8 "
Turnip, ...	670	450	5 "	10 "

These figures are considerably lower than those which were given by a committee in its report to the British Association for the Advancement of Science, in 1850. They found that the seeds of plants from twenty genera germinated after from twenty to twenty-nine years' separation from the parent plant. It should be stated in connection with the vitality of seeds that there is no positive evidence that wheat-grains from the wrappings of mummies have been made to germinate. All trustworthy evidence is to the contrary.

The degree of ripeness of seeds has some influence upon their power of germinating readily. One observer has shown that certain seeds which are not perfectly ripe germinate somewhat sooner than those which are mature, and he has also pointed out the interesting fact that seeds separated from the plant, but still enclosed in the fruit-vessel ripen.*

Seeds can be seriously injured by cutting or other mutilation without losing their germinating power. The repair is prompt in some instances, even to the extent of restoring one-half of the seedling plants. Van Teighem's experiments, in which seeds of the Sunflower were divided in halves, each half yielding a good plant, show how patient plants in their youngest stage can be under very untoward conditions. This power of repair in germs and seedlings has been compared to that observed among some of the lower animals.

Lastly, it should be noticed that in most seeds the supply of food is more than sufficient for the needs of the young plant, so that in case of any accident by which the seedling is injured, a fresh demand can be made upon the remainder of the store of food.

The manner in which the food is used by the seedling is to be examined in the next paper of the series.

Cambridge, Mass. *George Lincoln Goodale.*

Correspondence.

To the Editor of Garden and Forest:

Sir.—In the report of the U. S. Commissioners of Inquiry to Santo Domingo, 1871, on page 79, line 5, I read: "A great highway, about one hundred feet wide, lined on either side with a Sabea hedge, the trees now averaging more than a foot in diameter, by fifty or sixty feet high, and extending nearly the whole distance from Guerra to Santo Domingo City."

Will you oblige me by saying what "Sabea" is, and where I can learn of it?

Cambridgeport, Mass. *Chas. H. Hall.*

["Sabea" is evidently a mis-print from Ceiba, one of the names of the Cotton-tree of the West Indies and Central America (*Ceiba viticis foliis cudice aculeato vel glabro*, Plumier, *Pl. Am.* 42), now the *Eriodendron anfractuosum* of botanists. It is related to the Bombax of the Old World and is the largest of the West Indian trees. Enormous butresses strengthen the tall, straight stems which support broad masses of foliage high above all the surrounding vegetation, and add to the majestic appearance of this noble tree. The leaves are palmately digitate, the flowers rose-colored and abundant, and the seeds, contained in large capsules, are each enveloped in copious light-colored wool, to which it owes its popular name. This tree is propagated by sticking large-sized branches into the ground, which root and grow with great rapidity. The wood is light and very soft, and the large trunks, hollowed out, furnished the Caribs with canoes; the wool from the seeds is sometimes used for stuffing mattresses. The specific designation, anfractuosum, is derived from *amb* and *frango*, and means the winding or bending of a road or path, in and out or backwards and forwards—a name bestowed on the tree (according to Macfadyen, "Flora of Jamaica," 93) on account of its size, which caused the deflection of roads it being easier to change the course of a road than to cut through the buttresses of one of these giants; and perhaps a superstition of the negroes may have played its part in preserving these trees; for, according to Macfadyen, "even the untutored children of Africa are so struck with the majesty of its appearance that they designate it the 'God-tree,' and account it sacrilege to injure it with the axe, so that, not unfrequently, not even the fear of punishment will induce them to cut it down. Even in a state of decay, it is an object of their superstitious fears; they regard it as consecrated to evil spirits, whose favor they seek to conciliate by offerings placed at its base." There is much curious information about the Cotton-tree in Sir Hans Sloane's "Voyage to Jamaica," ii., 72, published in 1725, and no tree is so often alluded to in the accounts of early voyages to the West Indies and the Spanish Main. —Ed.]

*Gray's Text-book, Vol. II., p. 460.

Ornamental Trees in California.

To the Editor of Garden and Forest:

Sir.—There are many fine specimens of rare trees in the grounds about the summer residences of the wealthy Californians in this lovely valley, which is now at its best, covered with a carpet of richest green and dotted over with Live-Oak trees. Beautifully rounded green hills two miles distant, are backed by the Coast range on the side toward the ocean, while on the opposite side is the bay, hemmed in by another range on the further shore. The mildness of the climate may be inferred by noting the vegetation. Callas and Heliotropes showed the effect of light frosts a week or two ago, but are now beginning to flower freely.

I took special notice of two Almond-trees in full bloom a fortnight ago, and since then we have had several frosty mornings that would certainly have destroyed fruit blossoms in the east. The fruit on these trees is now set fully, and with not one sign of an injured blossom.

Araucaria Bidwillii, *A. Brasiliensis* and *A. imbricata*, are perfectly hardy here, as shown by perfect specimens twenty feet high, with no sign of ever having been injured in the winter, and as much at home here as in southern California, although the Norfolk Island Pine, the Grevillia, the Rubber-tree and a few others that are hardy in the south will not stand here.

The variety of tender and half-hardy trees and shrubs is wonderful when compared with the number that will grow in the east. There are here Acacias, apparently without number, Palms, Yuccas, Dracænas, Agaves, all the Magnolias, evergreen and deciduous, many now in full bloom, Camellias and Rhododendrons, with the brightest of foliage and covered with flowers.

Most interesting to me were the magnificent conifers, *Sequoia gigantea* and *S. sempervirens*, perfect specimens quite at home, and forty to sixty feet high. *Cedrus Deodara* and *C. Libani*, *Cryptomeria Japonica*, *Pseudotsuga Douglasii*, *Picea Sitchensis*, *Cupressus Lawsoniana* and many others, forty to sixty feet high. I was disappointed in not finding good specimens of *Abies concolor*, *A. nobilis* and *A. grandis*, etc., but fine specimens are rare compared with the number planted, for overcrowding here is the rule as far as I have seen. It is only in rare instances, and then apparently by accident, that a fine tree of the largest size has had an opportunity to develop fully. Fortunately among these are many fine Araucarias, Deodar Cedars, Douglas Spruce, Lawson's Cypress and Sitka Spruce. The last-named tree hardly met my expectations, as I had been led to believe that it resembled *Picea pungens*, which went for some time under the same name (*Abies Menziesii*).

It is a fine tree, however, a compact grower, well-filled in, and a broad pyramid in form. Many of the specimens show the peculiar shade of light blue on the new growth, resembling the darker blue tint in *Picea Ajanensis*. Indeed, this tree has a closer resemblance to *P. Ajanensis* than to *P. pungens*, as the branches incline upwards, as in *P. Engelmanni*, while *P. pungens* grows in whorls, one tier of branches rarely, if ever, running into and mixing with the tier above it. In the cone, also, and in the consistency of the leaf it resembles *P. Engelmanni* more closely than *P. pungens*.

I have only seen two specimens of *P. pungens* in this state. These are on the grounds of Senator Stanford, and they are fine specimens of the lightest shade. On the same grounds are a few fine specimens of *A. concolor*, four to eight feet high, and the only good ones I have seen. Other specimens of the tree and of the other California Silver Firs which have come under my notice, have been ruined by close planting.

The Douglas Spruce is a grand tree hereabouts, indigenous in the mountains a few miles distant. Under cultivation it can be used freely without producing sameness, as it varies very much in both form and color. But the one tree of all others which I admired most, and which can be used in greater quantity than any other native spiral-topped tree, from the variation of form and color in the individual specimens, is Lawson's Cypress. Specimens sixty feet high, perfect in form, with foliage of deep green, shaded with deep blue, are common. Others are so light in color that they would compare favorably with some of the so-called "golden" trees in cultiva-

tion. In form the trees vary greatly, some being broad and flat-headed, and others extremely slender, with drooping branches hanging close to the trunk.

It was a pleasure to see among all these new faces a few old friends, which seemed perfectly at home. The Norway Spruce, so common in the east, does remarkably well, and occasionally I see a specimen with a peculiarly graceful sweep of the lateral branches, which is equalled only by the Himalayan Spruce (*Picea Morinda*). I have only seen two of these trees here, both on the Flood estate. In contour they resemble those Norway Spruces, which throw out their arms a little below the horizontal. But beyond this there is no comparison between the trees. The leaves of the Himalayan Spruce are twice as long as those of the other, much stronger, set evenly around the branches, and in color are an indescribably lovely green on both sides. The dark-colored buds are remarkably large, and the male flowers much larger than those of the Norway Spruce. The cones, too, are much larger, with scales over half an inch wide, rounder, thicker, of a warm cinnamon color, and looking like a fine piece of cabinet-work, with an oil finish.

In place of the native Firs, which I missed, I find *Abies Nordmanniana*, doing wonderfully well, and making a perfect tree when standing alone.

Palo Alto, Cal., March 10th. *Robert Douglas.*

Recent Publications.

The Folk-Lore of Plants. By T. F. Thistelton Dyer. D. Appleton & Co.: New York. 1889.

No more charming book as a gift for the lover of flowers could be found than this one of Mr. Thistelton Dyer's, which recently appeared in England, and has been re-issued here, in attractive shape. The author says, in his preface: "Much has already been written on the folk-lore of plants, a fact which has induced me to give in the present volume a brief summary—with a few illustrations in each case—of the many branches into which the subject naturally subdivides itself." Perhaps the best-known book of its class is Friend's "Flower-lore." But this consists of two large, thick volumes filled with a mass of information and anecdote that, valuable in itself, is badly arranged, confused by frequent repetitions, and too voluminous to attract any but the most enthusiastic student. Other writers, who have taken up the entire subject or have devoted themselves to some single branch, have usually published their essays in periodicals which are difficult to obtain, and sometimes have written in a rather dry way from a strictly scientific point of view. There was a real need, therefore, for a small book which should cull the most interesting facts and fancies from previous publications and present them in a clear and readable form. This book Mr. Thistelton Dyer has given us. The information it contains will satisfy almost all readers, while its copious foot-notes will lead more inquiring minds to other reservoirs of knowledge.

The first chapters deal with primitive and savage notions concerning plants and with the plant-worship of ancient peoples. Plants in demonology, in fairy-lore, in folk-medicine, in religious ceremonials and in the calendar are severally discussed; and chapters are given to plant-names, to children's games, to dream-plants, love-charms and a number of similar subjects. Of course a book which consists of a mass of anecdotes, brief bits of information, quotations and illustrations cannot be systematically reviewed. All one can say of it in a general way is that it covers a wide field, all parts of which are equally well tilled, and offers many interesting and curious facts, not only to the lover of flowers, but to the student of myths, traditions and ethnographic relationships. Yet, as it is a book to be sincerely recommended, we may try to prove the interest and variety of its contents by extracting a few passages at random here and there.

"Briefly noticing the antecedent history of plant-worship," says the author, "it would seem to have lain at the foundation of the old Celtic creed, although few records on this point have come down to us. At any rate we have abundant evidence that this form of belief held a prominent place in the religion of these people, allusions to which are given by many of the early classical writers. Thus the very name of Druidism is a proof of the Celtic addiction to tree-worship, and De Brosses, as a further evidence that this was so, would derive the word kirk, now softened into church, from *Quercus*, an Oak, that species having been peculiarly sacred. . . . One of the last and best-known examples of the veneration of groves and trees by the Germans after their conversion to Christianity is that of the 'Stock am Eisen,' in Vienna," which, as Fergusson explains, is "the sacred tree into which every apprentice, down to recent times, before setting out on his *Wanderjahre*, drove a nail for luck. It now stands in the centre of that great capital, the last remaining vestige of the sacred grove round which the city has grown up, and in sight of the proud cathedral which has superseded and replaced its more venerable shade."

The Rowan-tree, or Mountain Ash, "has long been considered one of the most powerful antidotes against works of darkness of every kind, probably from its sacred associations with the worship of the Druids. Hence it is much valued in Scotland, and the following couplet, of which there are several versions, still embodies the popular faith:

> 'Rowan-tree and red thread,
> Put the witches to their speed.'

But its fame has not been confined to any one locality, and as far south as Cornwall the peasant, when he suspects that his cow has been 'overlooked,' twists an ashen twig round its horns.

"In Brittany young people prove the good faith of their lovers by a pretty ceremony. On St. John's Eve, the men, wearing bunches of green Wheat ears, and the women, decorated with Flax blossoms, assemble around an old historic stone and place upon it their wreaths. Should these remain fresh for some time after, the lovers represented by them are to be united; but should they wither and die away, it is a certain proof that the love will rapidly disappear."

Many flower-lovers must have wondered why an humble, graceful little herb (Galium) is called Bed-straw. This book will tell them. It was formerly "Our Lady's bed-straw," because it had filled the manger in which she laid the infant Jesus. Ribbon-grass is called in rural England "Our Lady's Garters," and the Dodder her "Laces." The Lilies-of-the-Valley are her "Tears," and the Maidenhair-Fern is "Virgin's hair." A curious fact is that while at the dawning of Christianity numerous plants which had been consecrated to heathen goddesses were re-dedicated to the Virgin; in Puritan times they were christened afresh under the name of Venus—the bitter hatreds of the time making even a pagan deity seem a less dangerous person to invoke or reverence than the Mother of God.

"The St. John's Wort gets its name from the belief that its blood-like little spots made their first appearance on the day when the saint was beheaded. A German legend informs us that as the Holy Family took its flight 'they came into a thickly-wooded forest, when, on their approach, all the trees, with the exception of the Aspen, paid them reverential homage.' The disrespectful arrogance of the Aspen, however, did not escape the notice of the Holy Child, who thereupon pronounced a curse against it, whereupon its leaves began to tremble, and have done so ever since. . . . The mournful tree which formed the wood of the cross has always been a disputed question. . . . According to Sir John Maundeville it was composed of Cedar, Cypress, Palm and Olive . . . the notion being that those four woods represented the four quarters of the globe. Foremost among the other trees to which this distinction has been assigned are the Aspen, Poplar, Oak, Elder and Mistletoe. Hence, is explained the gloomy shivering of the Aspen leaf, the trembling of the Poplar, and the popular antipathy to utilizing Elder twigs for fagots. But it is probable that the respect paid to the Elder has its roots in the old heathenism of the north, and to this day in Denmark it is said to be protected by 'a being called the elder-mother,' so that it is not safe to damage it in any way. The Mistletoe, which exists now as a mere parasite, was, before the crucifixion, a fine forest tree; 'its present condition,' says Baring-Gould, in his 'Myths of the Middle Ages,' 'being a lasting monument of the disgrace it incurred through its ignominious use.'"

Here, finally, are a few old rhymed proverbs with regard to the weather:

> "If the Oak is out before the Ash,
> 'Twill be a summer of wet and splash;
> But if the Ash is out before the Oak,
> 'Twill be a summer of fire and smoke."

> "When the Hawthorn bloom too early shows,
> We shall have still many snows."

> "Onion's skin very thin,
> Mild winter's coming in;
> Onion's skin thick and tough,
> Coming winter cold and rough."

> "When the Oak puts on his goslings grey
> 'Tis time to sow Barley night or day."

> "When Elm leaves are big as a shilling,
> Plant Kidney beans if you are willing;
> When Elm leaves are as big as a penny,
> You *must* plant Kidney beans if you wish to have any."

Notes.

Dr. Peyritsch, well-known for his studies of the morphology of plants, died recently at Botzen.

The National Society of Horticulture of France has decided to give in Paris, in November, an exhibition of Chrysanthemums.

The death of C. F. Martin, a veteran French botanist, and for many years director of the Botanic Garden of Montpellier, over which the great De Candolle once presided, is announced.

Marsh Marigolds from New Jersey swamps and meadows were in great abundance on the street flower-stands on Saturday, and no brighter yellow was seen among all the Easter flowers.

The Spring Meeting of the Pennsylvania Forestry Association will be held in the Chapel of the Normal School, Westchester, on Friday the 26th inst., at 7.30 P. M. Mr. B. G. Northrop will address the Association upon the subject of Arbor Day. All persons interested in the preservation of our trees and forests are invited to be present.

Easter Lilies, in large quantities, from Bermuda, were on sale in this city last week. They do not endure transportation well, and are much inferior to home-grown flowers, the prices of which were but slightly affected by the imported Lilies. The demand for all kinds of flowers seemed greater than ever, but owing to the lateness of the season the market was well supplied, and prices were not exorbitant. Roses and Daffodils were in greatest demand. In the decoration of churches branches of Japan Quince, Forsythias, Genista and other shrubs in flower were used very generally, and with good effect.

In Philadelphia the Bermuda Lily and *L. longiflorum* were both unusually abundant in the Easter flower-markets, and prices declined twenty per cent. The highest retail price for these was forty cents each for every open flower and unexpanded bud upon the plant. Azaleas were abundant and sold at profitable prices. Tulips, as cut flowers, except the lighter varieties, were in slight demand. Roses were sought for more than any other flower, and brought good prices. There seemed to be no notable preference for any particular flower. Flowering plants of Hydrangea of various kinds were sold in great numbers, but they are always popular as gifts at this season.

The Swiss Alpine Club and a newly-formed society for the protection of native plants have recently joined in establishing a garden in which Alpine plants are to be grown and the directors of which will endeavor to spread among the people a knowledge of the great necessity which exists for preserving them from extermination. Not only the famous "Edelweiss" but numberless other Swiss plants are in danger of being swept from the face of the earth by reckless tourists and by native collectors, who pick them in large quantities to press and sell to foreigners. The garden is to be called "Linnæa," and the place chosen for it is near the town of Fionnay, in the commune of Bagues, Valais, at a height of some 1,500 metres above the sea-level.

The leading article in the *Gardeners' Chronicle* for March 30th was a reprint of the one on Mr. Hunnewell's "Italian Garden" at Wellesley, which was recently published in these columns. The full-page picture which formed the supplement of the same issue was not, however, a duplicate of ours, but a different view of the gardens, taken last year from the lake. Its label inaccurately gave the site of the garden as "Boston, Massachusetts." Wellesley lies, in fact, some dozen miles from Boston, in the town which derives its name from Mr. Hunnewell's estate, and of which the chief feature, as is well known in this country, is Wellesley College, one of the largest establishments of the sort in the world devoted exclusively to the education of women.

A correspondent of an English horticultural journal wrote as follows with regard to the Orchid Exhibition held not long ago in the Eden Musée in this city: "Being the first horticultural show that I had ever witnessed in the United States I was somewhat desirous of observing in what points it would vary from one in the old country. It was astonishing to note so great a difference in the methods and manner of exhibiting the plants, there being none of that stiff formality so characteristic of the English flower-show, but all was grace and elegance, even to the tables, which were not overcrowded or in straight lines, showing off the exhibits to advantage. . . . The largest and most meritorious exhibit was that of the firm of Siebrecht & Wadley." Mr. W. S. Kimball was mentioned as chief among the amateur exhibitors, although the collections of others were named with praise.

The death was recently announced of Ernst Rudolph von Trautvetter, who was born in Germany in 1809, but spent most of his life in Russia. In 1835 he was appointed assistant to the director of the Imperial Botanical Garden in St. Petersburg, and a little later professor of botany at the University of Kiew, where he founded a botanical garden. In 1850 he became rector of this university, and in 1866 was made director of the St. Petersburg garden. More than eighty botanical treatises were published by Trautvetter, most of which relate to the flora of the far northern parts of Russia and Siberia, and of the Caucasus, and the most southerly parts of European Russia. He was recognized as an authority on the plants of the empire, and his chief works—"Floræ Rossicæ Fontes" and "Incrementa Floræ Phanogamæ Rossicæ"—are indispensible to all botanists who desire to carry his investigations further.

The Rev. Dr. R. S. Storrs has retired from the Board of Park Commissioners of Brooklyn. In his letter of resignation he explains that this step has been rendered necessary by a recent interpretation of the law by which the functions of the Board are regulated. Under this interpretation the Board has no authority to expend, according to its own judgment, and under its responsibility to the city, the moneys specifically appropriated for its use in the care and maintenance of the parks. Dr. Storrs says: "It is quite impossible for me to devote time and labor to the work of making suggestions which, after they shall have been discussed, matured and adopted by the Board, may or may not prove acceptable to others having the real authority in the premises. My time and thought are too much engaged upon other things to allow them to be given to such ineffective skirmishing in the air; and it is painful to me to see the Park already suffering, and destined to suffer more and more for want of work which the Board has no power to order to be done, yet for which the feeling of the city holds it responsible."

The windows of the flower-shops in Boston have never been so well filled as they are this year. They have not before displayed such a variety of flowers, or such well-grown specimens. Not even in Paris can displays of this sort be seen so tastefully arranged. Roses, in very great variety and of surprising excellence, are the great feature in these windows; but there is a marked increase of comparatively rare flowers—Orchids, Lilies, Amaryllis with forced Rhododendrons and Gladioli, besides the usual forced bulbs in great variety, Azaleas, Violets, Pansies, Carnations and other familiar flowers. There is no other city where such dislays can be seen, or where such free object-lessons are offered to every passer-by. The number and the excellence of the flowers sold in the streets by itinerant dealers, at prices which can hardly make much return to the growers, is simply astonishing. Boston is more than holding its own as a great centre in the world of horticultural development and horticultural taste, and the labors of the men who founded and maintained the Massachusetts Horticultural Society is now bearing its legitimate fruits.

Continuing his articles on the cultivation of Roses for the production of attar, to which we have already referred as an interesting feature in recent numbers of the *Gartenflora*, Dr. Dieck gives the following account of planting operations in Roumelia: "In the autumn, sections of ripened wood, about one foot in length, are laid in trenches at the distance of two or three feet apart, and covered with two or three inches of soil. The sprouts, which spring from the eyes in the wood, take root without difficulty and grow into hedges, which often bear as early as the second year, although it is only in the fourth year that complete development is reached and a full harvest can be gathered. The hedges are formed one or two metres apart, according as it is desired or not to grow vegetables between them. In the autumn, and in the spring until harvesting time, the ground is diligently hoed and loosened, and, in certain places, the bushes are covered at the advent of winter, as in the higher districts harmful frosts are not uncommon." The methods of culture pursued in Asia Minor are similar. But the planting is carried on in a "truly Turkish way," which reveals the fatalistic Mohammedan belief that if Allah wills a tree to grow the help of man is superfluous. "The worthy Turk of Bithynia simply makes a hole about two feet deep in the place where he wishes a new Oil-rose to grow. Then he cuts off from a Rose-tree a bundle of twigs, throws them in the hole, with a pile of horse-dung on top of them, fills up the hole, and leaves the rest to Allah. The only remarkable thing is that almost invariably some one of the buried buds manages to sprout, pushes up through the dung and the heavy layer of earth, and justifies the faith of its planter."